HOMOCYST(E)INE LEVELS IN MEN WITH PREMATURE CORONARY ARTERY DISEASE.

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Plasma homocyst(e)ine [H(e)], i.e., free and bound, homocysteine, homocystine and homocysteine-cysteine mixed disulfide were determined in 170 men with premature coronary artery disease (CAD) diagnosed at coronary angiography (mean age±SD 50±7 years) and 255 control subjects clinically free of CAD (mean age 49±6 years). Patients with CAD had higher H(e) levels than control subjects (13.66±6.44 vs 10.93±4.92 nmol/mL, $p<0.0005$). High density lipoprotein cholesterol (HDL-C) levels were lower in the CAD group (32±10 vs 46±13 mg/dL, $p<0.0005$) and triglycerides levels (TRIG) were higher in the CAD group (193±103 vs 136±106 mg/dL, $p<0.0005$). Plasma total cholesterol (TCHOL) or low-density lipoprotein cholesterol (LDL-C) were not significantly different between cases and controls. In the patient group, the presence of hypertension or diabetes mellitus did not significantly alter H(e) levels. Patients who were not taking beta-adrenergic blocking drugs (beta-blockers) (n=70) had non-significantly higher H(e) levels than those on this class of drugs (n=100)(14.67±8.92 vs 12.95±3.77 nmol/mL, $p=0.087$). None of the control subjects were on beta-blockers. No significant correlations were observed between H(e) and age, TCHOL, LDL-C, HDL-C or TRIG. We conclude that H(e) levels are an independent risk factor for the development of premature coronary atherosclerosis in men.

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Interventional Catheterization: Methods and Results in Pediatric Cardiology

TRANSCATHETER OCCLUSION OF CORONARY ARTERY FISTULAE

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Transcatheter occlusion of coronary artery fistulae was attempted in 6 patients aged from 2 to 67 years, median age of 16 years. Congenital fistulae were present in 5 cases, 4 of which originated from branches of the left coronary artery and in 1 from the right. The anomalous vessel opened into the right ventricle (2 patients), into the coronary sinus (1), the right atrium (1) and a bronchial artery (1). One patient had a post surgical fistula, a complication of aortic valve replacement, from the right coronary artery into the right atrium. Two patients (both adults) were symptomatic, one with angina and the other with mild cardiac failure.

Techniques used for embolisation included detachable balloons in three cases, multiple coils in two and a combination of balloon and coils in one patient. The procedure was not successful in the patient with a post surgical fistula, the balloon spontaneously deflated after it had been successfully sited in a good position. In the remaining patients the angiogram immediately after the embolisation revealed a good position of the device in all cases, with mild residual flow in two patients. Follow up ranged from 1 month to 4 years (mean of 0.9 years). All patients underwent cardiac Doppler evaluation and two repeat cardiac catheterisation. Mild residual flow was found in one patient.

Transcatheter occlusion is a new and effective approach to the treatment of coronary artey fistulae, being a safe alternative to surgical correction.

BALLOON ANGIOPLASTY OF STENOSED BLALOCK-TAUSSIG ANASTOMOSIS: ROLE OF BALLOON ON A WIRE IN DILATING COMPLETELY OCCLUDED SHUNTS

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Six children with cyanotic congenital heart defects, aged 6 to 60 months, underwent percutaneous balloon angioplasty of the narrowed Blalock-Taussig (BT) shunt to improve arterial oxygen saturation. The indication for angioplasty was cyanotic heart defect not amenable to total surgical correction either because of the age and size at presentation or because of anatomic complexity but at the same time requiring palliation of pulmonary oligemia. Following balloon angioplasty, there was an increase in arterial oxygen saturation from 71 ± 7 to 81 ± 6% ($p<0.05$) in five children with discrete narrowing of the shunt while the saturation did not change in the single patient with long-segment narrowing. The pulmonary artery pressure (13 ± 6 vs 15 ± 6 mm Hg) did not significantly change ($p>0.1$). The single child with no improvement in O_2 saturation underwent an additional BT shunt. On follow up, 3 to 6 months after balloon angioplasty, the oxygen saturations remained improved (78 ± 10%) in the remaining five patients.

In two children with either complete or almost complete blockage of the BT shunt, we were unable to advance any catheter or guidewire across the shunt but we were able to advance a 2 mm balloon Probe (USCI) and dilate the shunt followed by introduction of a larger balloon for angioplasty. This has resulted in obtaining the pulmonary artery pressure directly, information of obvious value in patient management in addition to improving the arterial oxygen saturation.

It is concluded that 1) balloon angioplasty of narrowed BT shunts is feasible, effective and safe and 2) even completely occluded shunts can be cannulated and balloon dilated with the newly available balloon Probes or similar devices.

OBSTRUCTION OF SYSTEMIC-PULMONARY ARTERIAL SHUNTS BY DIAGNOSTIC CARDIAC CATHETERS

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Accurate assessment of PA pressure and pulmonary vascular resistance (PVR) is crucial in children who may be candidates for Fontan's operation. In many such children, pulmonary blood flow is supplied primarily or exclusively by systemic-pulmonary arterial shunts. We hypothesized that passage of diagnostic catheters across these shunts might reduce pulmonary artery pressure, yielding falsely low estimates of PVR. This hypothesis was tested in an artificial circulation model in which "pulmonary" flow (QP) was supplied through 1 of 4 systemic-pulmonary arterial shunts which abruptly tapered to 2, 2.5, 3, and 4 mm internal diameter at their "pulmonary" insertions. The system was filled with a sucrose solution adjusted to 4 cP relative viscosity. Pulsatile flow was supplied at 105 beats/min. Pressure in the model aorta and pulmonary artery were monitored through side ports. "Systemic" flow (QS) and QP were measured by timed volume collections. After baseline recording, the shunt was crossed with a 5, 6, or 7F catheter or 0.035" guidewire. Results are presented in the Table as % change from control; values significant at $p<0.05$ are marked by (*).

Shunt size(mm):	2	2.5	3	4	2	2.5	3	4
Catheter size	Mean PA pressure				QP/QS			
7F	-	-	-57*	-17*	-	-	-76*	-29*
6F	-	-75*	-33*	-14*	-	-85*	-53*	-24*
5F	-82*	-48*	-19*	-10	-87*	-61*	-38*	-13*
0.035"	-23*	-5	-7	2	-26*	-15*	-4	-1

Conclusion: Passage even of small cardiac catheters across systemic-pulmonary arterial shunts significantly lowered QP/QS and mean PA pressure in this artificial circulation model. If these phenomena are not taken into account in children with similar circulation, erroneously low estimates of PVR could result.